SENSYLINK Microelectronics

(CA9544)

Low Voltage 4-Channel I²C/SMBus Switch with Interrupt

CA9544 is a 4-channel bidirectional translating switch with interrupt input/output controlled by I²C/SMBus. It supports one master can access one pair or any combinations of 4 pairs of slave devices via the I²C or SMBus interface.
It is ideally used in Server and Telecom equipment.

Low Voltage 4-Channel I²C/SMBus Switch with Interrupt

Description

The chip is a 4-channel bidirectional translating switch with interrupt input and output controlled by I²C/SMBus. The upstream pair (SCL/SDA from the master) fans out to 4 downstream pairs (SCL0-3/SDA0-3 from the slaves). The CA9544 has 8-bit control register, which allows selecting any channel or any combinations of channel 0-3.

Power-on reset feature can resets the chip to recover from stuck situation from any downstream pair. It can reset the I²C bus state machine, and all channels will be deselected.

Four interrupt inputs ($\overline{INT0}$ - $\overline{INT3}$), one for each of downstream pairs is provided. One interrupt output ($\overline{INT}$) acts as an AND of four interrupt inputs.

The chip allows using different bus voltage on each pair, like 1.8V, 2.5V or 3.3V, which can communicate with 5.0V parts by connecting external pull-up resistors to desired voltage.

Available Package: SOP-20, TSSOP-20，QFN3x3-20 and QFN5x5-20 package.
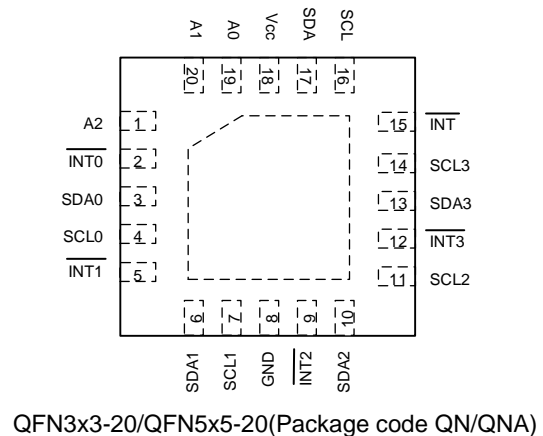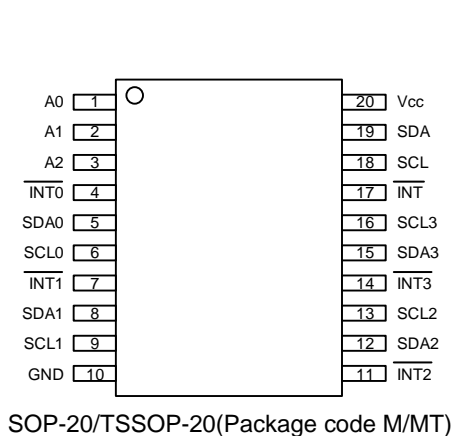
Features

- Operation Voltage: 1.65V to 5.5V
- Standby Current: 1.5uA (Max.)
- 1-of-4 bidirectional translating switches between 1.8V, 2.5V, 3.3V and 5.0V
- Compatible with SMBus and I²C interface
- I²C Speed up to 1.0MHz (Fast mode+)
- Up to 8 slave addresses
- One Interrupt output with active low for upstream channel
- Four Interrupt inputs with active low for each downstream channel
- 5.5V tolerant inputs
- Channel0-3 or any combination selection by Control Register
- Support hot insertion
- No Glitch during Power-up
- Noise Filter on SCL/SDA inputs
- Temperature Range: -40°C to 85°C

Applications

- Server, Notebook PC
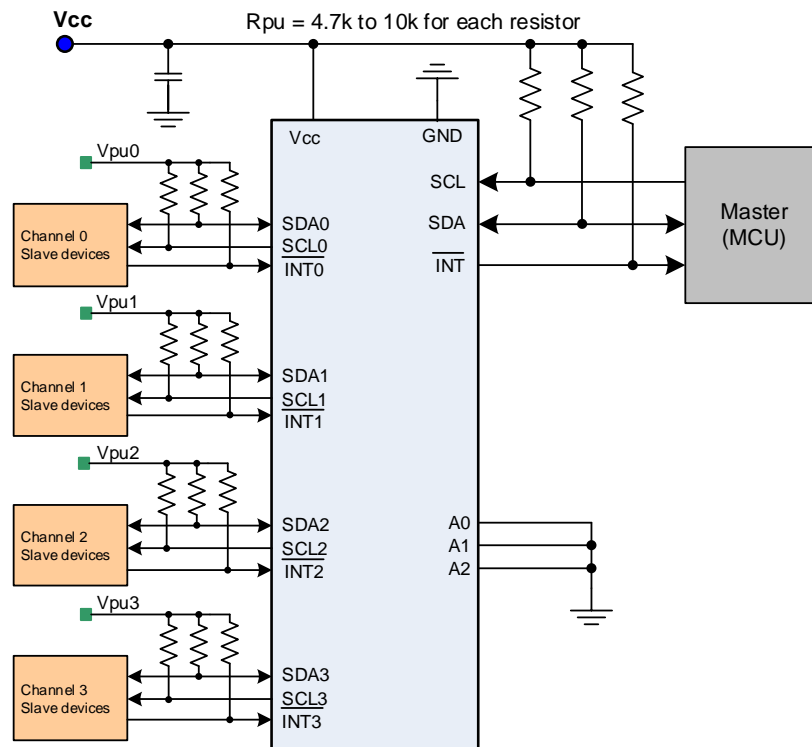- Telecom equipment

PIN Configurations (Top View)

SOP-20/TSSOP-20(Package code M/MT)

Pin	Name	Pin	Name
1	A0	20	Vcc
2	A1	19	SDA
3	A2	18	SCL
4	$\overline{INT0}$	17	$\overline{INT}$
5	SDA0	16	SCL3
6	SCL0	15	SDA3
7	$\overline{INT1}$	14	$\overline{INT3}$
8	SDA1	13	SCL2
9	SCL1	12	SDA2
10	GND	11	$\overline{INT2}$

QFN3x3-20/QFN5x5-20(Package code QN/QNA)

Typical Application

Figure 1. Typical application of CA9544

Pin Description

PIN Name	PIN No.		Description
	SOP-20 TSSOP-20	QFN3x3-20 QFN5x5-20	
A0	1	19	Slave addresses setup pins, which can generate 8 kinds of slave addresses by connecting these pins to GND or Vcc respectively.
A1	2	20	
A2	3	1	
$\overline{INT0}$	4	2	Interrupt input 0 with active low, connect to Vpu0[1] via a pull-up resistor.
SDA0	5	3	Serial data of channel 0, connect to Vpu0[1] via a pull-up resistor.
SCL0	6	4	Serial clock of channel 0, connect to Vpu0[1] via a pull-up resistor.
$\overline{INT1}$	7	5	Interrupt input 1 with active low, connect to Vpu1[1] via a pull-up resistor.
SDA1	8	6	Serial data of channel 1, connect to Vpu1[1] via a pull-up resistor.
SCL1	9	7	Serial clock of channel 1, connect to Vpu1[1] via a pull-up resistor.
GND	10	8	Ground pin.
$\overline{INT2}$	11	9	Interrupt input 2 with active low, connect to Vpu2[1] via a pull-up resistor.
SDA2	12	10	Serial data of channel 2, connect to Vpu2[1] via a pull-up resistor.
SCL2	13	11	Serial clock of channel 2, connect to Vpu2[1] via a pull-up resistor.
$\overline{INT3}$	14	12	Interrupt input 3 with active low, connect to Vpu3[1] via a pull-up resistor.
SDA3	15	13	Serial data of channel 3, connect to Vpu3[1] via a pull-up resistor.
SCL3	16	14	Serial clock of channel 3, connect to Vpu3[1] via a pull-up resistor.
$\overline{INT}$	17	15	Interrupt output with active low, connect to Vcc via a pull-up resistor.
SCL	18	16	Digital interface clock input pin, need a pull-up resistor to Vcc.
SDA	19	17	Digital interface data input or output pin, need a pull-up resistor to Vcc.
Vcc	20	18	Power supply input pin, using 0.1uF low ESR ceramic capacitor to ground

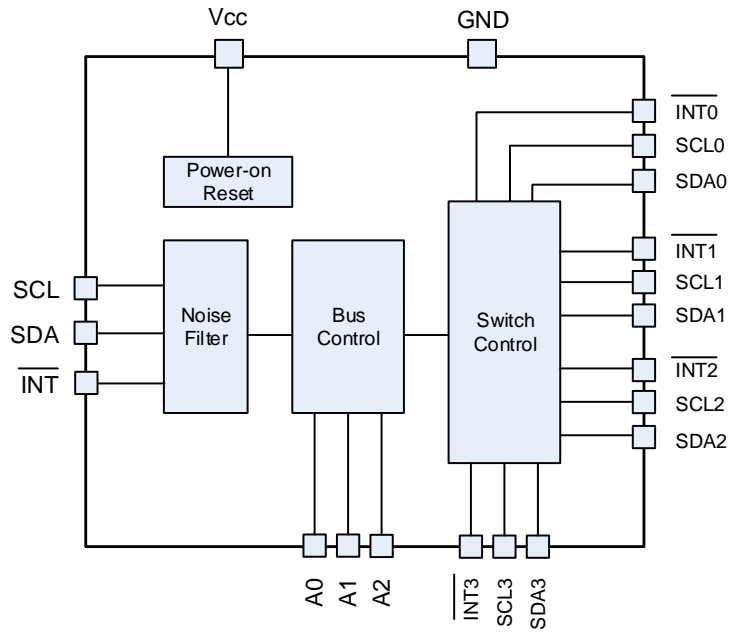[1] Vpu0-Vpu3 are the pull-up reference voltage for the associated data line.
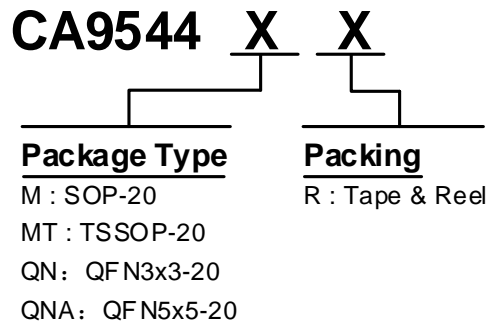
Function Block

Figure 2. CA9544 function block

Ordering Information

CA9544 X X

Package Type
M : SOP-20
MT : TSSOP-20
QN：QFN3x3-20
QNA：QFN5x5-20

Packing
R : Tape & Reel

Order PN	Green[1]	Package	Marking ID[2]	Packing	MPQ	Operation Temperature
CA9544MR	Halogen free	SOP-20	9544 YWWAXX	Tape & Reel	1,000	-40°C ~ +85°C
CA9544MTR	Halogen free	TSSOP-20	9544 YWWAXX	Tape & Reel	4,000	-40°C ~ +85°C
CA9544QNR	Halogen free	QFN3x3-20	9544 YWWAXX	Tape & Reel	3,000	-40°C ~ +85°C
CA9544QNAR	Halogen free	QFN5x5-20	9544 YWWAXX	Tape & Reel	5,000	-40°C ~ +85°C

Notes

1. Sensylink can meet RoHS 2.0/REACH requirement. So most package types Sensylink offers only states halogen free, instead of lead free.

2. Marking ID includes 2 rows of characters. In general, the 1st row of characters are part number, and the 2nd row of characters are date code plus production information.